CLAIMS

I claim:

1. A readout system for a matrix output device, comprising:

a resistor matrix that is coupled directly to outputs of the matrix output device wherein the resistor matrix comprises resistors and electrical paths that match rows and columns of the matrix output device;

a first set of amplifiers, wherein one amplifier is attached to an end of each row of the resistor matrix;

a second set of amplifiers, wherein one amplifier is attached to an end of each column of the resistor matrix;

processing circuitry that processes signals received from the first and second set of amplifiers attached to the resistor matrix;

electrical paths that connect each amplifier to the processing circuitry;

an output signal from the processing circuitry that can be displayed on a display device, wherein the output signal comprises location and other information regarding signals received from the matrix output device.

2. The readout system of claim 1 wherein, the matrix output device is a Position Sensitive Photo-Multiplier Tube (PSPMT) matrix, and the resistors of the resistor matrix are coupled directly to anodes of the PSPMTs.

3. The readout system of claim 1 wherein, the processing circuitry is analog or digital.

4. The readout system of claim 1 wherein, the processing circuitry executes one of the following information determination algorithms: center of gravity interpolation; charge division readout; or delay line readout.

5. The readout system of claim 1 wherein, the outputs from the matrix output device are spaced 2.5 mm apart from each other, and
the resolution provided by the output signal of the processing circuitry is better than .5 mm.

6. The readout system of claim 1 wherein, the matrix output device has 256 outputs and the resistor matrix 16 amplifiers.

7. A method for reading out the information provided by a matrix output device, comprising the steps of:

coupling a resistor matrix directly to outputs of the matrix output device wherein the resistor matrix comprises resistors and electrical paths that match rows and columns of the matrix output device;

amplifying a row signal from each row of the resistor matrix wherein, the row signal is a combination of all signals received in a particular row of the resistor matrix;

amplifying a column signal from each column of the resistor matrix wherein, the column signal is a combination of all signals received in a particular column of the resistor matrix;

transmitting the row and column signals to processing circuitry that processes the signals in order to determine location and other information that is received from the matrix output device;

providing electrical paths that connect the resistor matrix to the processing circuitry;

outputting an output signal from the processing circuitry that can be displayed on a display device, wherein the output signal provides location and other information received from the matrix output device.

8. The method of claim 7 wherein the step of transmitting further comprises processing the signals with analog or digital processing circuitry.

9. The method of claim 7 further comprising the step of:

using one of the following algorithms in processing the signals: center of gravity interpolation; charge division readout; or delay line readout.

10. The method of claim 7 further comprising the step of:

displaying the processing results with a resolution better than 0.5 mm, wherein the outputs of the matrix output device are spaced 2.5 mm apart.

11. The method of claim 7 wherein the step of coupling further comprises coupling a resistor matrix with 16 amplifiers to a matrix output device with 256 outputs.

12. The method of claim 7 wherein, the matrix output device is a Position Sensitive Photo-Multiplier Tube (PSPMT) matrix.